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| 10/552,672 | 10/06/2005 | Xia Gao | M-15431 US | 2292 |
| 32605 | 7590 | 12/12/2007 | | |
| MACPHERSON KWOK CHEN & HEID LLP | | | EXAMINER | |
| 2033 GATEWAY PLACE | | | TRINH, SONNY | |
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

| | | | |
|------------------------------|------------------------|---------------------|--|
| Office Action Summary | Application No. | Applicant(s) | |
| | 10/552,672 | GAO ET AL. | |
| | Examiner | Art Unit | |
| | Sonny TRINH | 2618 | |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) Responsive to communication(s) filed on 06 October 2005.
- 2a) This action is FINAL. 2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) Claim(s) 1-44 is/are pending in the application.
- 4a) Of the above claim(s) 33-44 is/are withdrawn from consideration.
- 5) Claim(s) _____ is/are allowed.
- 6) Claim(s) 1-11, 17-28 is/are rejected.
- 7) Claim(s) 12-16 and 29-32 is/are objected to.
- 8) Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on _____ is/are: a) accepted or b) objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) All b) Some * c) None of:
 1. Certified copies of the priority documents have been received.
 2. Certified copies of the priority documents have been received in Application No. _____.
 3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) Notice of References Cited (PTO-892)
- 2) Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) Information Disclosure Statement(s) (PTO/SB/08)
 Paper No(s)/Mail Date _____
- 4) Interview Summary (PTO-413)
 Paper No(s)/Mail Date. _____
- 5) Notice of Informal Patent Application
- 6) Other: _____

DETAILED ACTION

Election/Restrictions

1. Applicant's election of Group I (claims 1-32) in the reply filed on 10/12/2007 is acknowledged. Because applicant did not distinctly and specifically point out the supposed errors in the restriction requirement, the election has been treated as an election without traverse (MPEP § 818.03(a)).

Drawings

2. **Figure 1** should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g). Corrected drawings in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. **Claims 1-4, 18-21** are rejected under 35 U.S.C. 102(b) as being anticipated by Donahoo, M.J.; Ainapure, S.R., "Scalable multicast representative member selection," INFOCOM 2001. Twentieth Annual Joint Conference of the IEEE Computer and Communications Societies. Proceedings. IEEE, vol.1, no., pp.259-268 vol.1, 2001, hereinafter "IEEE document".

Regarding **claim 1**, the IEEE discloses a method for providing scalable reliable multicast service (page 259, see abstract and introduction) comprising: transmitting a group of data packets over a communication medium to a group of receivers designated by a multicast address (such as sending video data to the group of receivers, see page 259 and the introduction); receiving over the communication medium from the group of receivers acknowledgement packets, each acknowledgement packet representing a failure by one of the receivers to receive a number of the data packets specified by the acknowledgement packet (pages 259-263).

Regarding **claim 2**, it is inherent that the communication medium comprises a first data link for transmitting packets from the sender to the receivers, and a second data link for transmitting packets from the receivers to the sender.

Regarding **claim 3**, the IEEE document further discloses that the communication medium is divided into time slots and wherein, during receiving, each time slot is assigned to the receivers for acknowledging a failure to receive a specified number of

data packets (pages 260-263 from section II RELATED WORK to III BACKOFF TIMER).

Regarding **claim 4**, since the receivers with the poorer quality has the smaller backoff timer than the receivers with better quality (see page 261 section A. *Targeted Slotted and Damping*), it is inherent that specified number of data packets not received is implicitly specified by the position of each time slot.

Regarding **claims 18-21**, these claims are the obvious receiving method as opposed to the transmit method of claims 1-4 and are therefore rejected for the same reasons.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. **Claims 5, 22** are rejected under 35 U.S.C. 103(a) as being unpatentable over the IEEE document in view of Applicant's admitted prior art.

Regarding **claim 5**, the IEEE document discloses the invention but does not disclose that wherein a collision detected during receiving in a time slot is deemed to be equivalent to receiving an acknowledgement packet in that time slot. As disclosed by Applicant in paragraph [0016], the collision of an ACK and a NACK packet is treated as a negative acknowledgement. Therefore, it would have been obvious to a person of ordinary skill in the art at the time of the invention to combine the teaching of Applicant

admitted prior art to the teaching of the IEEE document. The motivation for combining would be for the sender to know that a packet has been delivered.

Regarding **claim 22**, this claim is the obvious receiving method as opposed to the transmit method of claim 5 and is therefore rejected for the same reasons.

5. **Claims 6-8, 23-25** are rejected under 35 U.S.C. 103(a) as being unpatentable over the IEEE document in view Kelly et al. (hereinafter “Kelly”; U.S. Patent Number 6,834,039).

Regarding **claim 6**, the IEEE document discloses the invention but does not explicitly disclose that the sending a control packet to the receivers specifying an allocation of the communication medium for transmitting the data packets and for the receivers to send the acknowledgement packets.

In an analogous art, Kelly teaches a bandwidth allocation scheme for TCP/IP system over a TDMA based network. Kelly further teaches that the system specifies the allocation of the communication medium for transmitting the data packets and for the receivers to send the acknowledgement packets (column 8, specifically lines 7-47, column 14 lines 34-50).

Therefore, it would have been obvious to one of ordinary skill in the art, at the time the invention was made to apply the teaching of Kelly to the system disclosed by the IEEE document. The motivation for doing so would be to allow for faster recovery of inroute packets errors.

Regarding **claim 7**, Kelly further discloses that the data packets include one or more forward error correcting parity packet (FEC) prepared in response to an acknowledgement packet received (column 8 lines 19-47, column 20 tables 6-7).

Regarding **claim 8**, the combination of the IEEE document and Kelly discloses the invention but does not disclose that the number of FEC parity packets prepared corresponds to the largest number of data packets failed to be received by a receiver, as indicated by the acknowledgement packets received. However, it would have been obvious to a person of ordinary skill in the art at the time of the invention to have the FEC parity packets prepared corresponds to the largest number of data packets failed to be received by a receiver, as indicated by the acknowledgement packets received so that an appropriate amount (packets) can be resend to the receiver(s).

Regarding **claims 23-25**, these claims are the obvious receiving method as opposed to the transmit method of claims 6-8 and are therefore rejected for the same reasons.

6. **Claims 9, 26** are rejected under 35 U.S.C. 103(a) as being unpatentable over the IEEE document in view Kelly and in further view of Kwak (U.S. Patent Number 7149,192).

Regarding claim 9, the combination of the IEEE document and Kelly discloses the invention but does not disclose the steps of storing the data packets and the FEC parity packets in a multicast buffer until a sufficient number of data packets and FEC parity packets are deemed received by the receivers.

In an analogous art, Kwak teaches a base station for implementing a physical layer automatic request. Kwak further discloses the steps of storing the data packets and the FEC parity packets in a multicast buffer until a sufficient number of data packets and FEC parity packets are deemed received by the receivers (claim 13).

Therefore, it would have been obvious to one of ordinary skill in the art, at the time the invention was made to apply the teaching of Kwak to the system disclosed by the IEEE document and Kelly. The motivation for doing so would be to clear the buffer once all packets have been sent to allow more space for future packets in the buffer memory.

Regarding **claim 26**, this claim is the obvious receiving method as opposed to the transmit method of claim 9 and is therefore rejected for the same reasons.

7. **Claims 10-11, 27-28** are rejected under 35 U.S.C. 103(a) as being unpatentable over the IEEE document in view Maxemchuk et al. (hereinafter “Maxemchuk”; U.S. Patent Application Publication Number 2004/0078624 A1).

Regarding **claim 10**, the IEEE document discloses the invention but does not explicitly disclose the transmitting one or more forward error correcting parity packet (FEC) proactively in anticipation of failure by the receivers to receive one or more of the data packets.

In an analogous art, Maxemchuk teaches a system and method for the repair of IP multicast sessions. Maxemchuk further teaches disclose the transmitting one or more forward error correcting parity packet (FEC) proactively in anticipation of failure by the

receivers to receive one or more of the data packets (paragraphs [0015], [0024], [0135]).

Therefore, it would have been obvious to one of ordinary skill in the art, at the time the invention was made to apply the teaching of Maxemchuk to the system disclosed by the IEEE document. The motivation for doing so would be to increase the reliability of its response.

Regarding **claim 11**, Maxemchuk further discloses that the data packets include data packets of a plurality of multicast messages (abstract).

Regarding **claims 27-28**, these claims are the obvious receiving method as opposed to the transmit method of claims 10-11 and are therefore rejected for the same reasons.

8. **Claim 17** is rejected under 35 U.S.C. 103(a) as being unpatentable over the IEEE document.

Regarding **claim 17**, the IEEE document discloses the invention but does not explicitly disclose the steps of receiving a positive acknowledgement package from a selected one of the receivers. However, since the document discloses that a NACK is sent back to the transmitter from the receiver (page 260, section II. Related Work), it would have been obvious and well within the level of a person of ordinary skill in the art to modify the teaching of the IEEE document to also send a positive acknowledgement package from a selected one of the receivers. The motivation for sending a positive

acknowledgement package is to let the sender / transmitter that a good packet has been received so that the sender / transmitter can continue to send additional package.

Allowable Subject Matter

9. **Claims 12-16, 29-32** are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Regarding **claims 12 and 29**, the applied references fail to disclose or render obvious the claimed limitations, wherein the communication medium is multiplexed between a first data link for transmitting packets from the sender to the receivers, and a second data link for transmitting packets from the receivers to the sender, the first data link and the second data link each being provided a time period for data transmission of a predetermined duration before yielding the communication medium to the other data link.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sonny TRINH whose telephone number is 571-272-7927. The examiner can normally be reached on Monday-Thursday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Edward URBAN can be reached on 571-272-7899. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

12/4/07



SONNY TRINH
PRIMARY EXAMINER